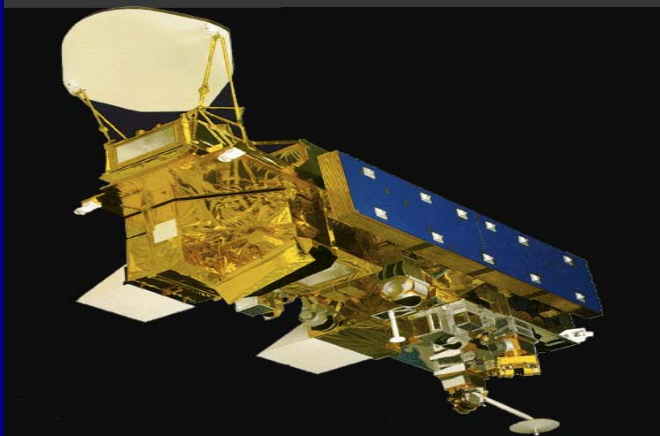


# INTEX-A summer 2004 experiment: Some Preliminary Observations

By H. B. Singh & Science Team

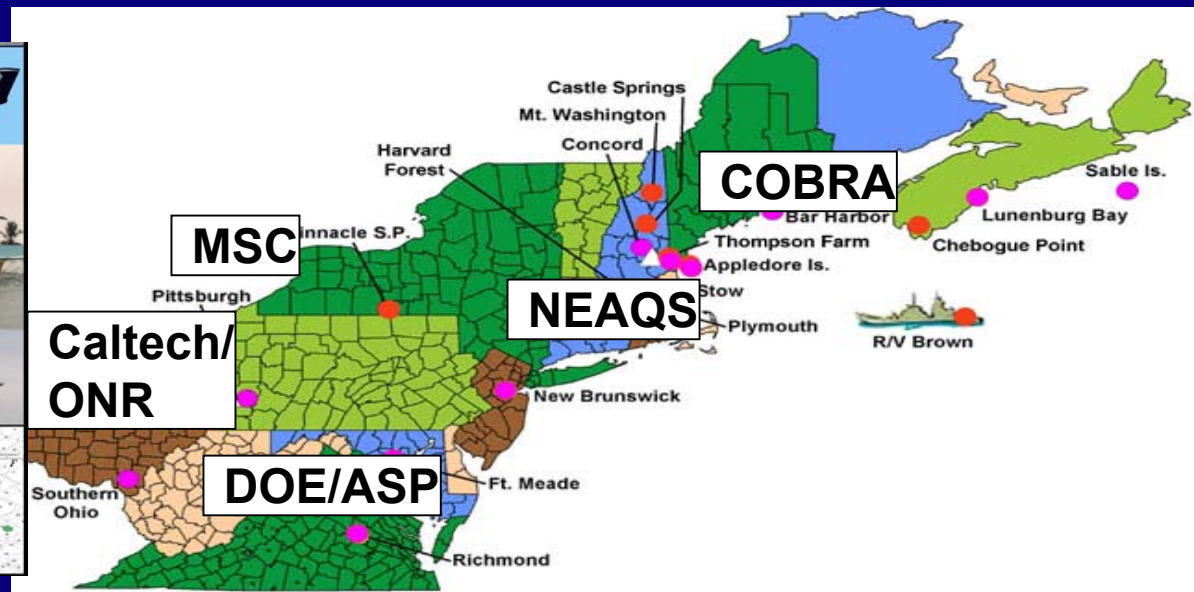
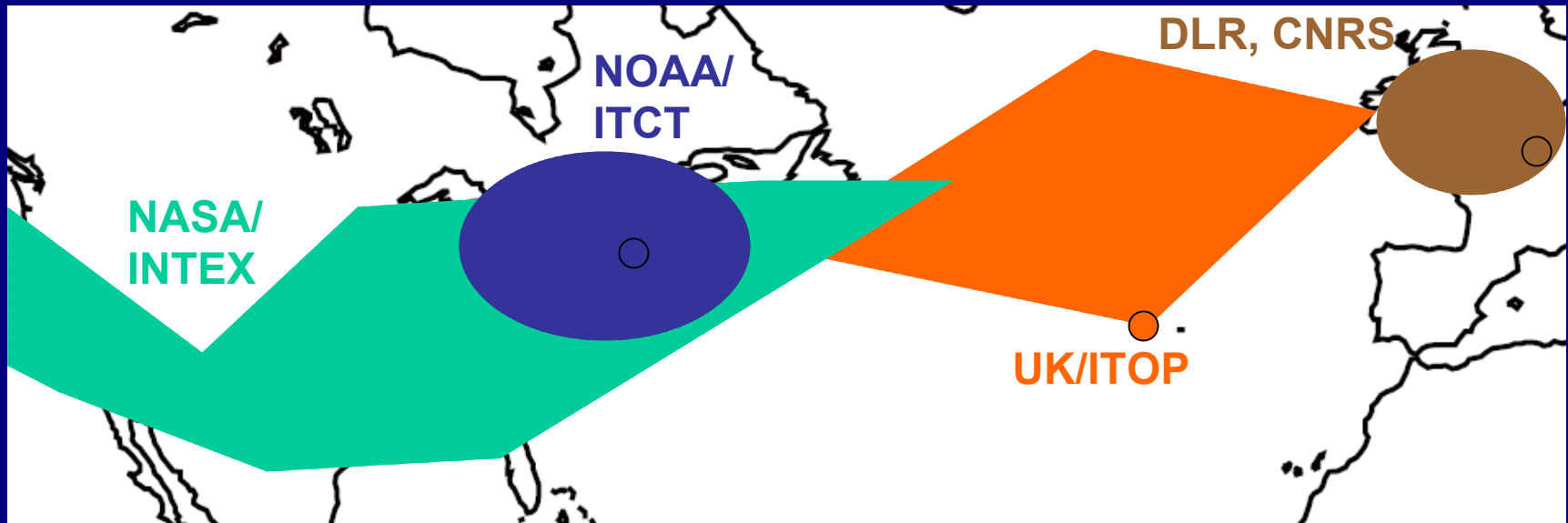
**GOAL: To investigate and understand the transport and transformation of climate changing gases and aerosols on intercontinental scales**



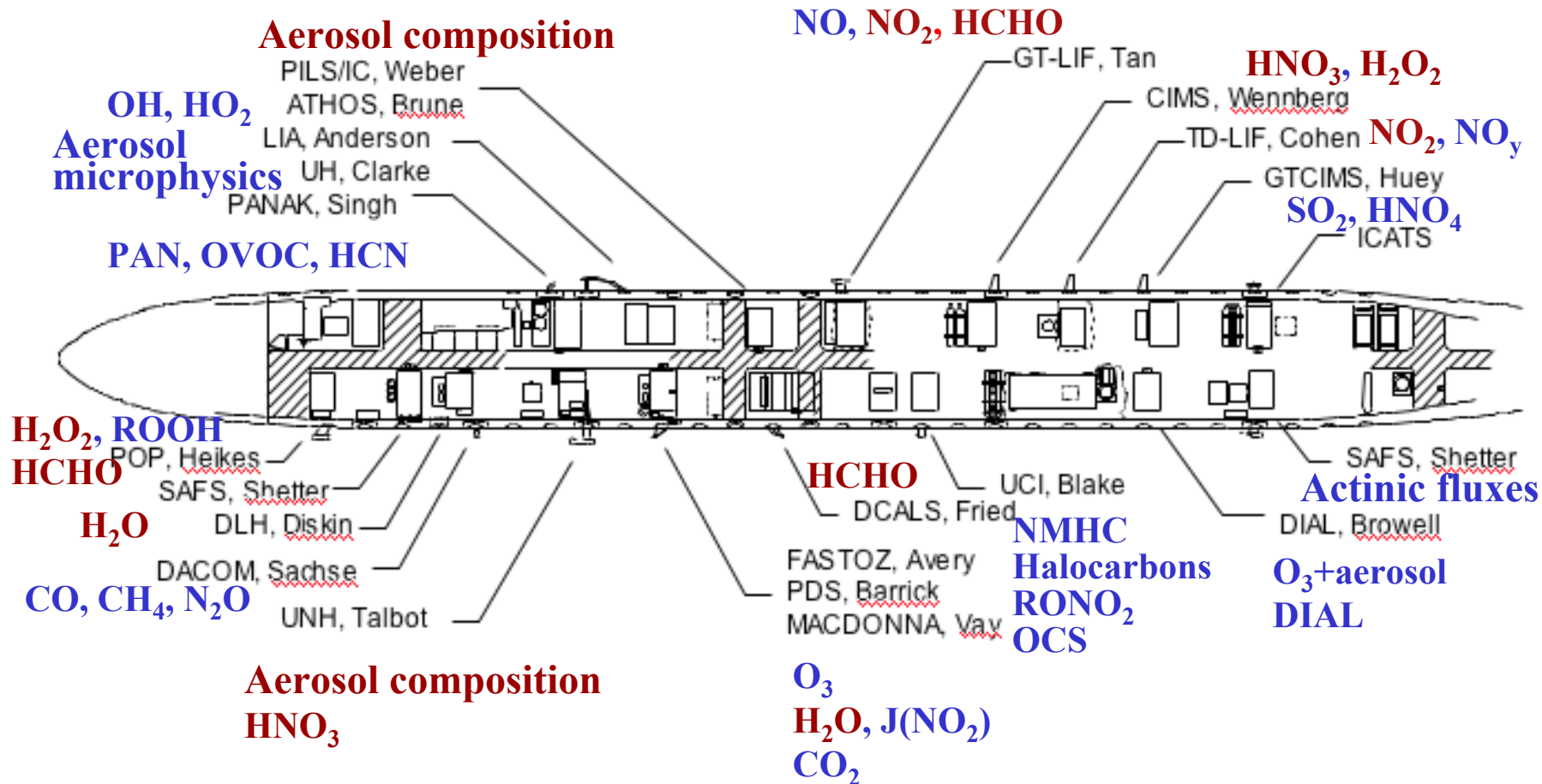
**Partners:**  
**United States**  
**Canada**  
**United Kingdom**  
**France**  
**Germany**

Intercontinental Chemical Transport Experiment North America  
International Consortium for Atmospheric Research on Transport and Transformation

# ICARTT TEAMS

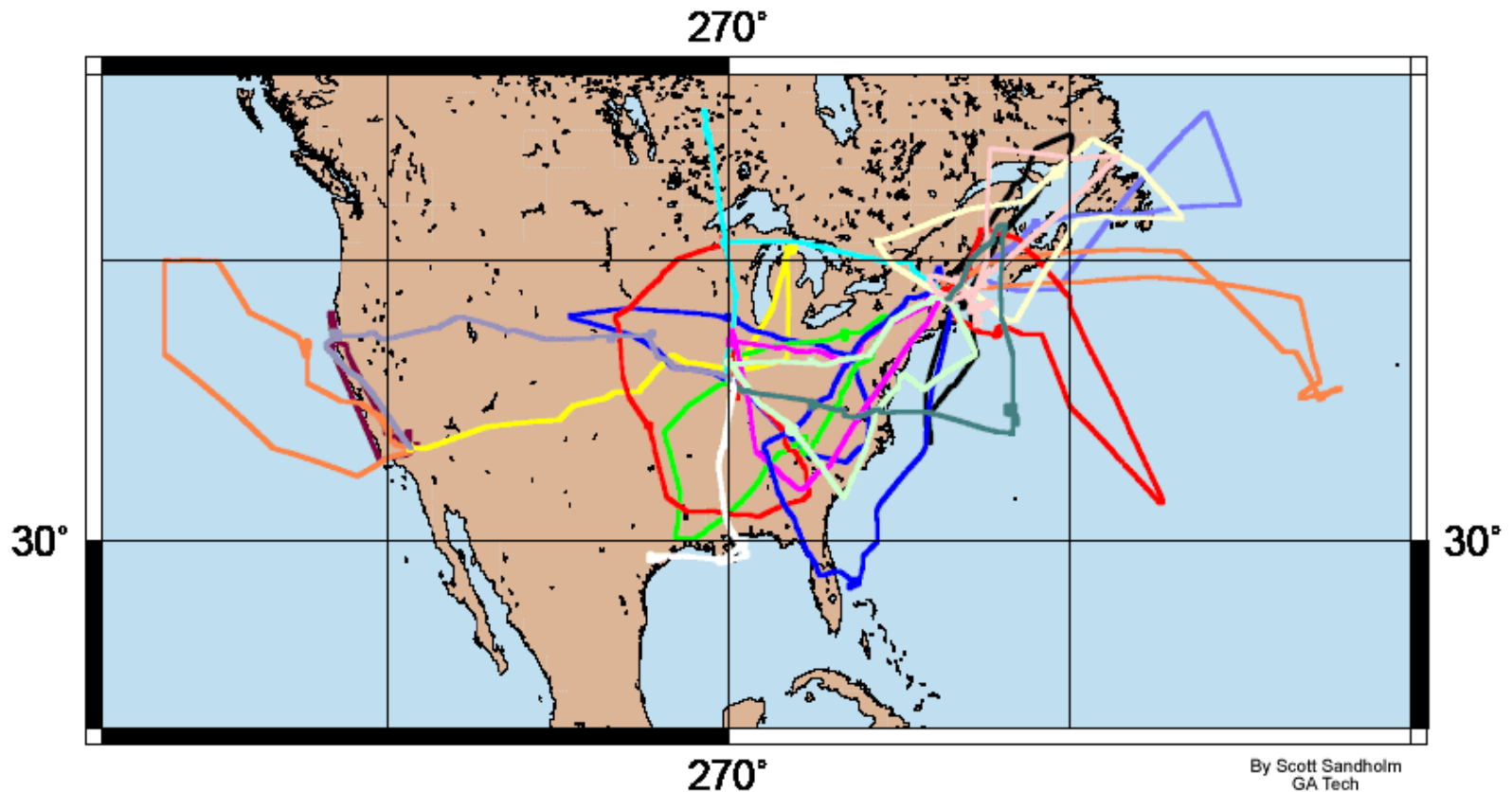


# DC-8 Payload



# INTEX-A DC-8 Flight Tracks

(Missions 2-20; June 29 - August 14, 2004)



# DC-8 coordinated activities

Flight No.	Date (2004)	Base	Terra	Aqua	Envi	J-31	K. Air	R. Brown	P-3
3	7/1	Dryden		X					
4	7/6	Transit							
5	7/8	M. Amer	X						
6	7/10	M. Amer		X	X				
7	7/12	M. Amer		X	X				
8	7/15	Transit	X	X			X		
9	7/18	Pease		X	X			X	
10	7/20	Pease		X		X			
11	7/22	Pease	X			X		X	X
12	7/25	Pease	X	X					

4      7      3      2      1      2      1

# Smoke from fires and pollution layers





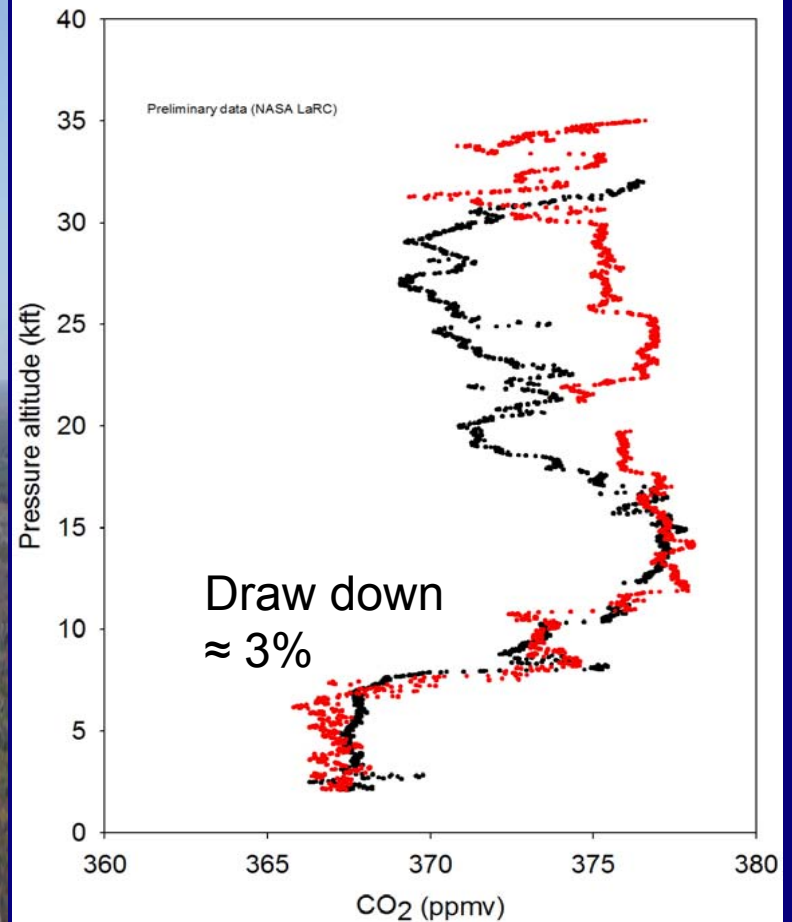
# Carbon cycle research in INTEx-NA

**Park Falls, WI [447m; 46N, 90W]**

**NASA DC-8 spiral 0.5-33 Kft  
NSF King Air 0.5-25 Kft**

**440 m Tower**

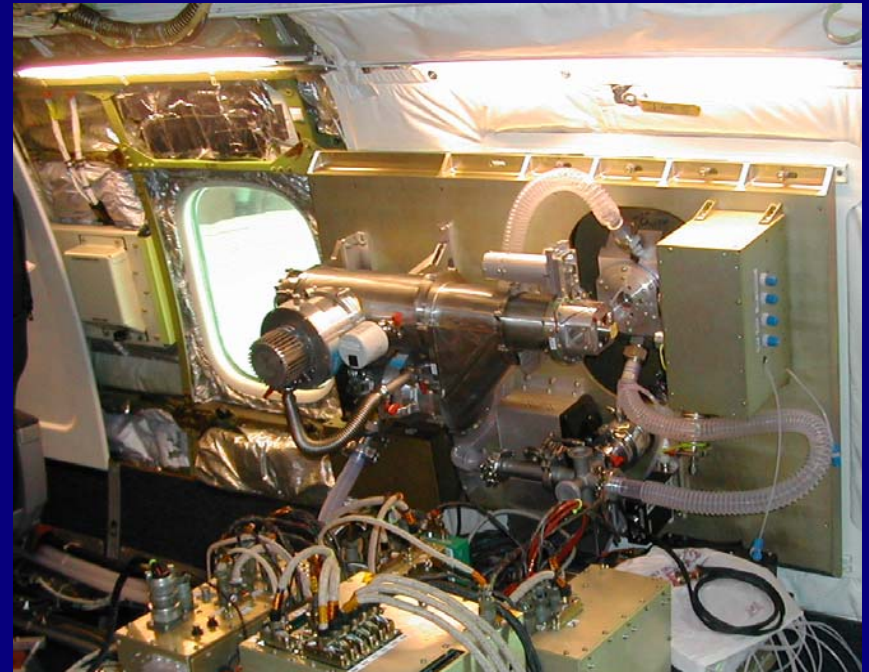
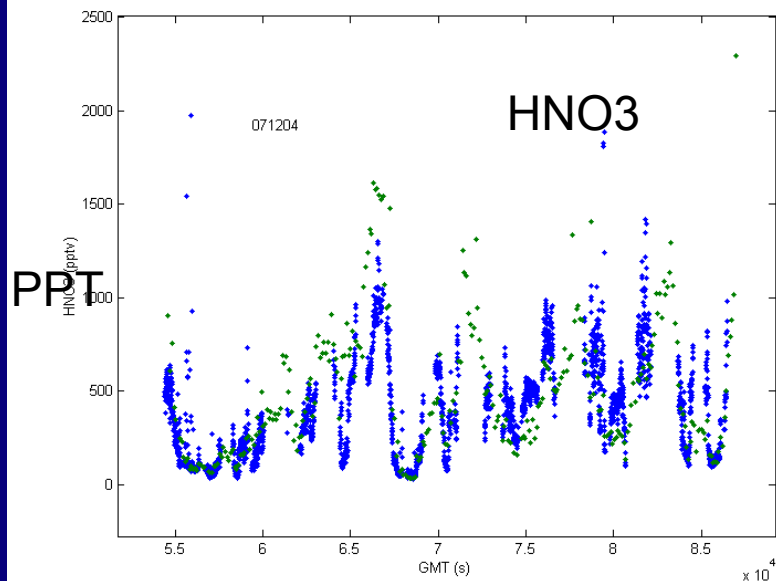
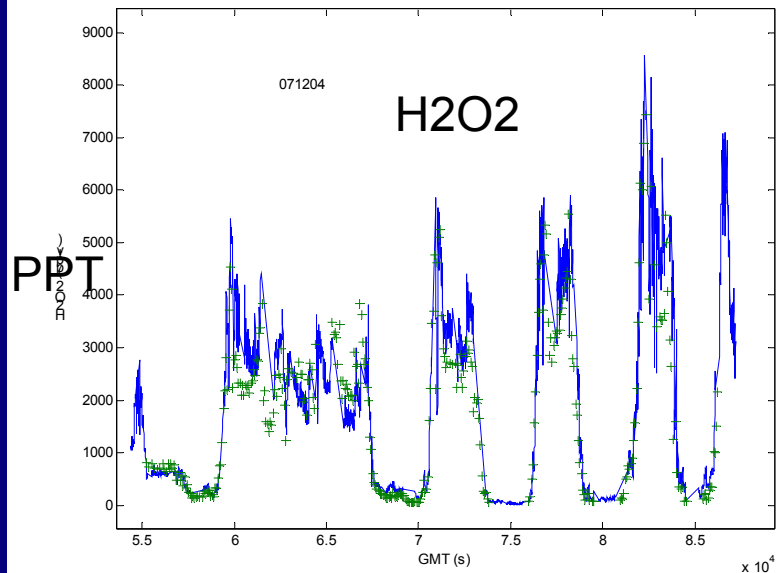
**FTS-CO<sub>2</sub> column**



S. Vay

# Intercomparisons

## CIMS & derivative HPLC



## CIMS & Mist Chamber IC

Wennberg/Heikes



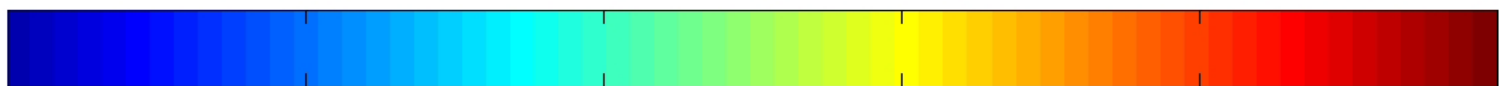
# AIRS CO and MODIS Smoke

Local PM (ascending) AIRS CO at 500 mb on 20040718

60° N

40° N

60° W



60

80

100

120

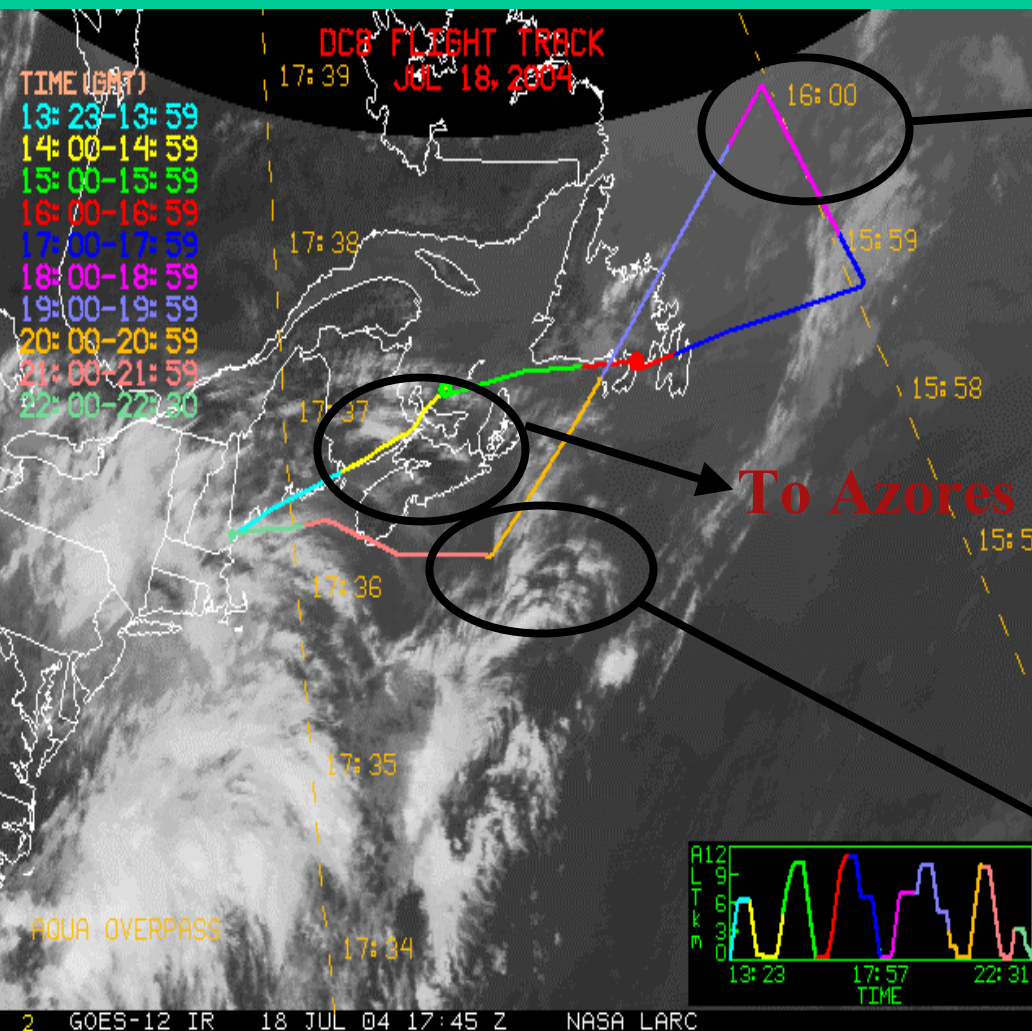
140

160

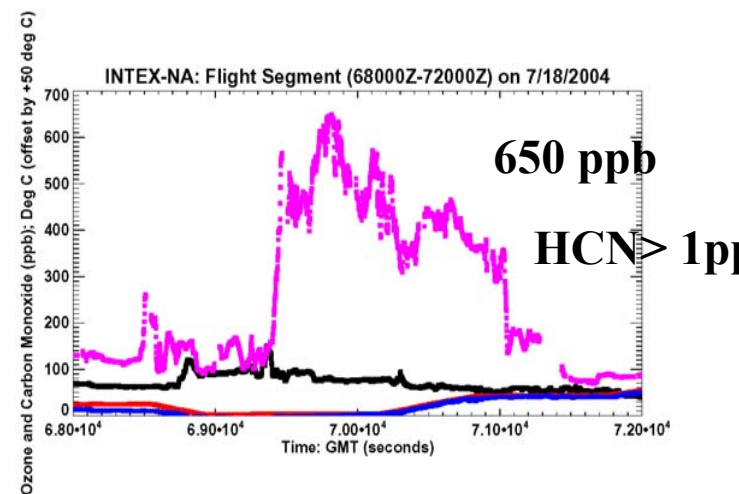
CO Mixing Ratio (ppbv) at 500 mb

7/19 MODIS Terra

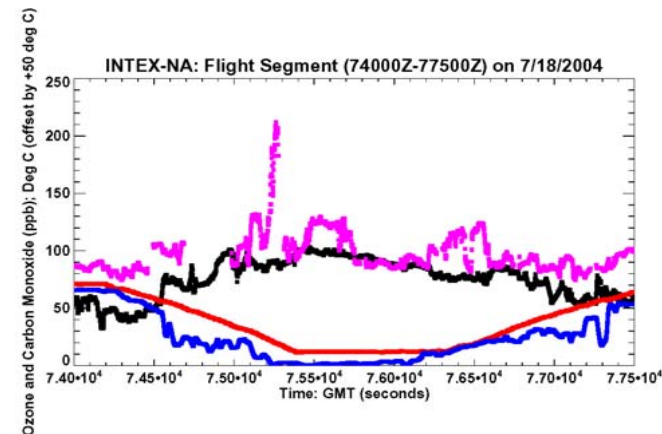
# Flight 9 on July 18, 2004: DC-8 In Situ Ozone, CO, Dewpoint and T



## Alaskan Fire Smoke

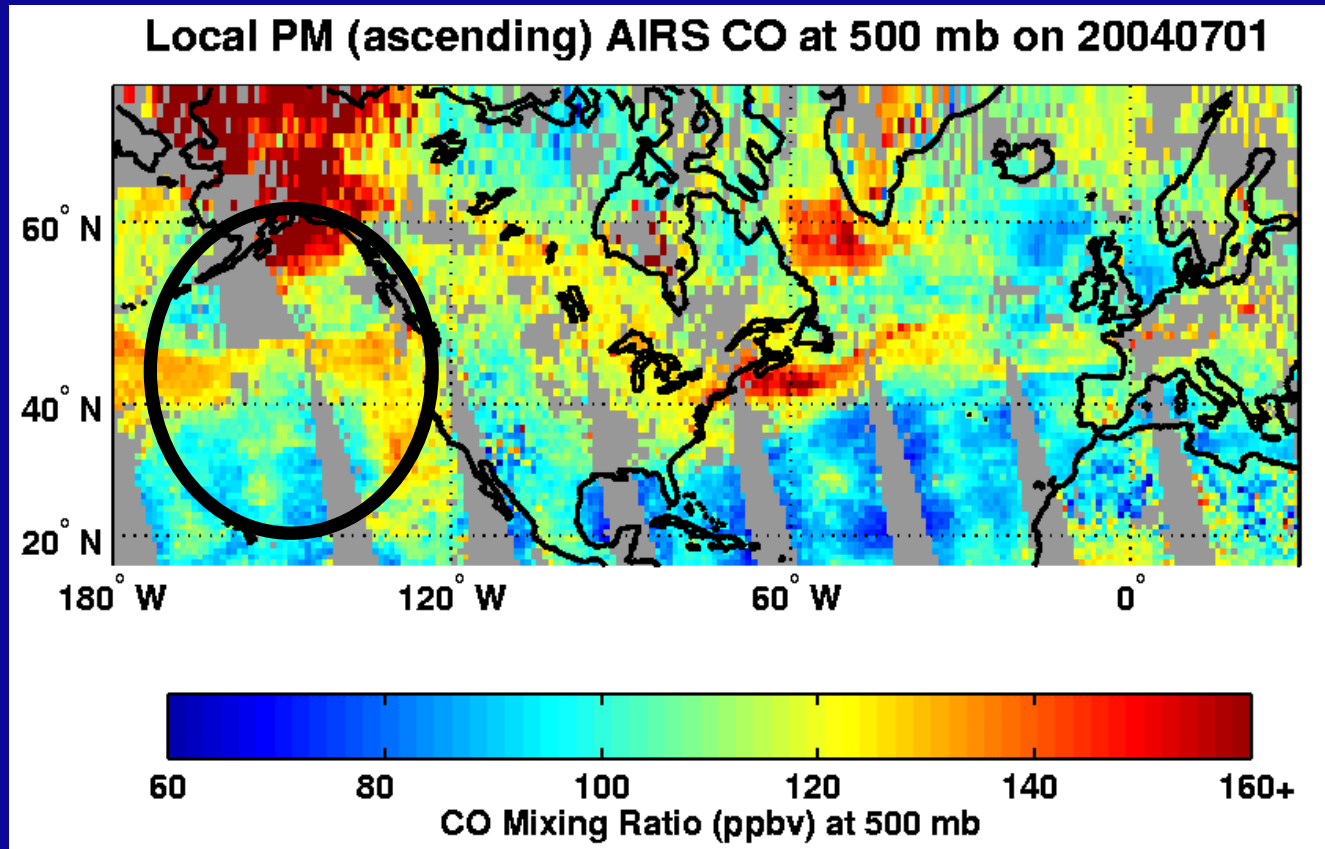


## Asian Outflow, Convective and Stratospheric Influence



G. Sachse, M. Avery, J. Barrick

# Approaching Asian plume seen by AIRS CO



July 01

INTEX-NA Flt#03

Asian & CA Outflow

07-01-04

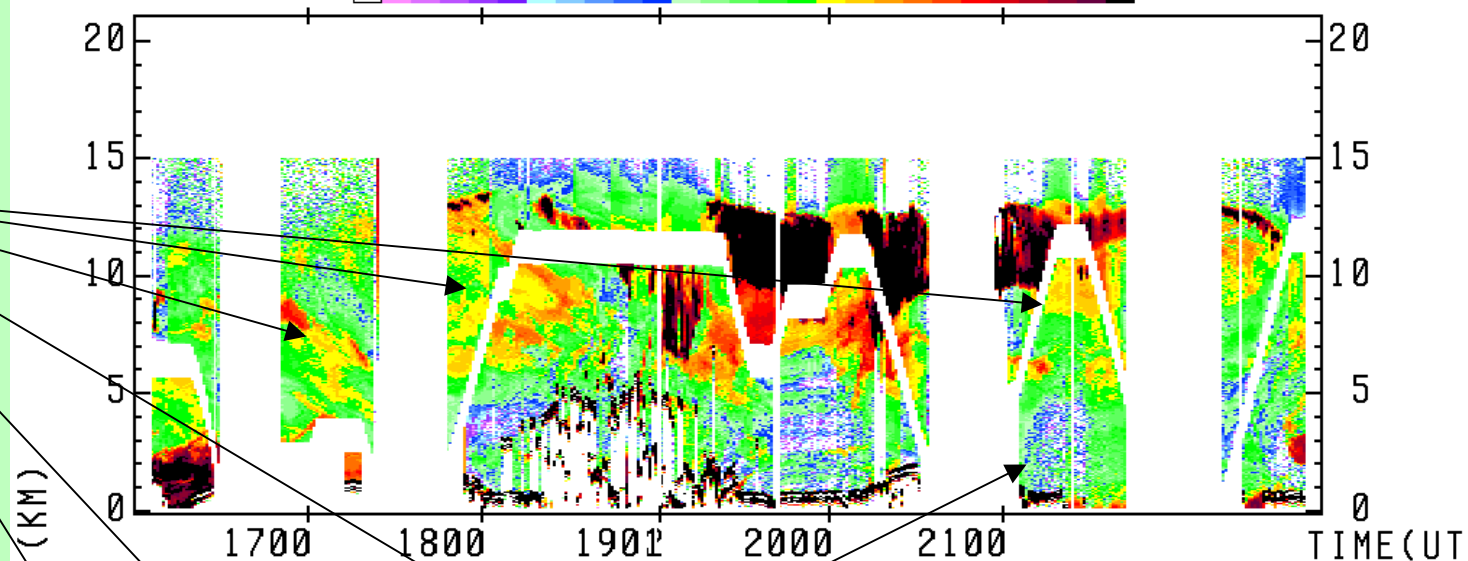
DIAL/Browell  
Hair,Butler,Notari

Aerosol Scattering Ratio (1064 nm)

0.01 0.10 1 10

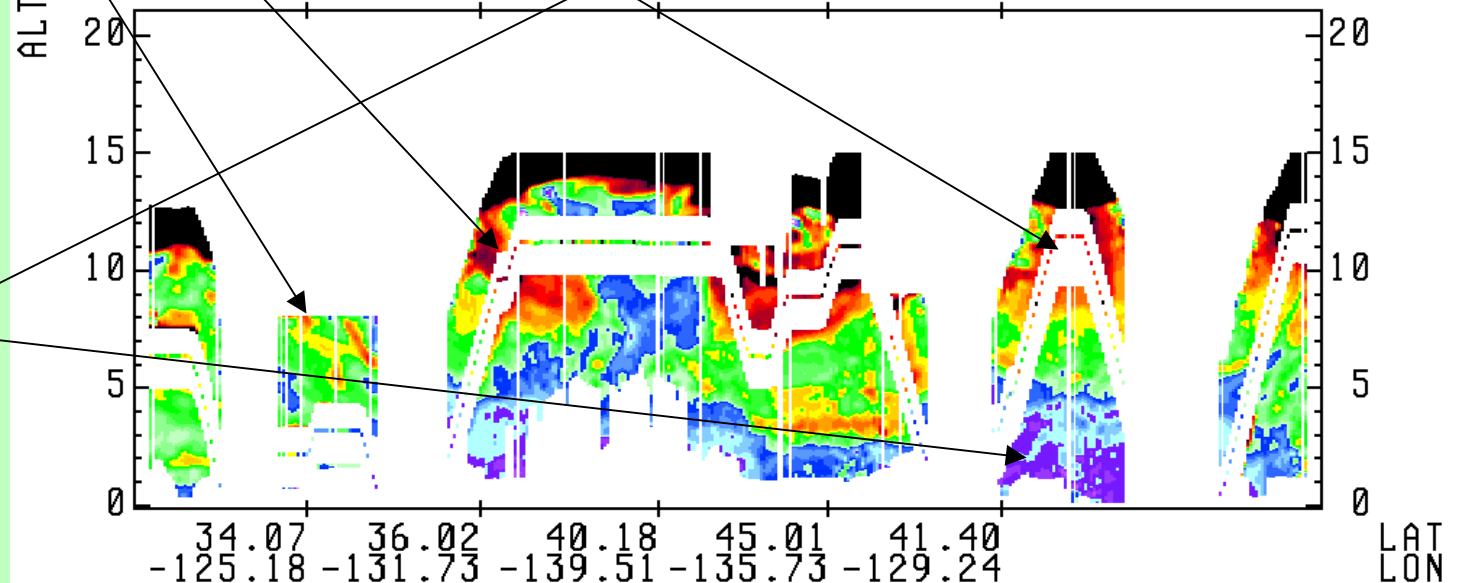


Asian  
Outflow



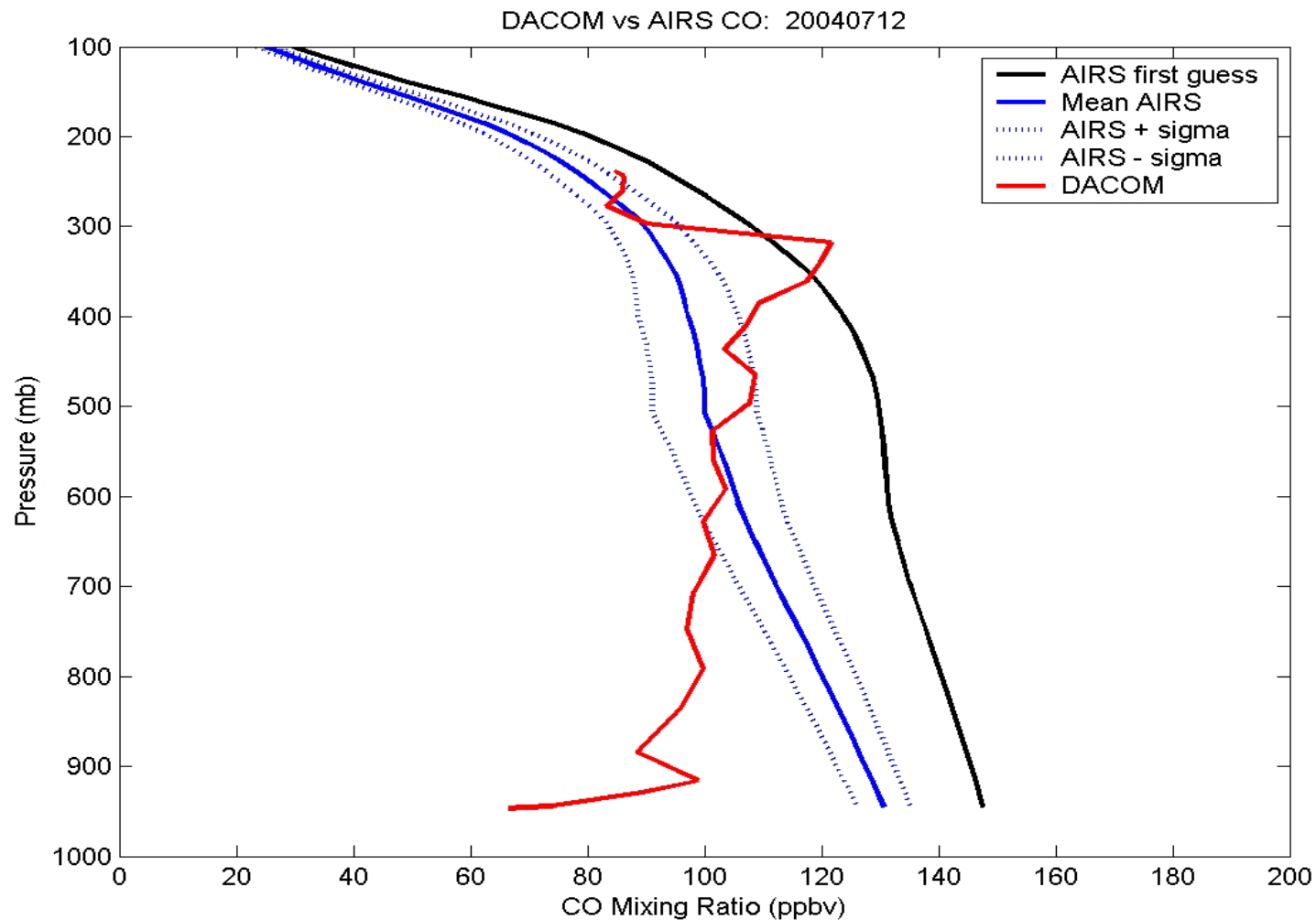
Ozone Mixing Ratio (PPBV)

0 25 50 75 100 125



Clean  
Marine

# First INTEX AIRS Validation

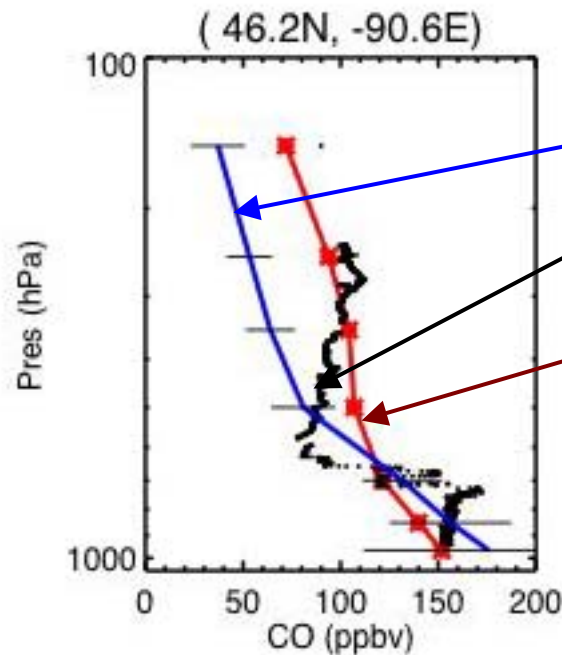
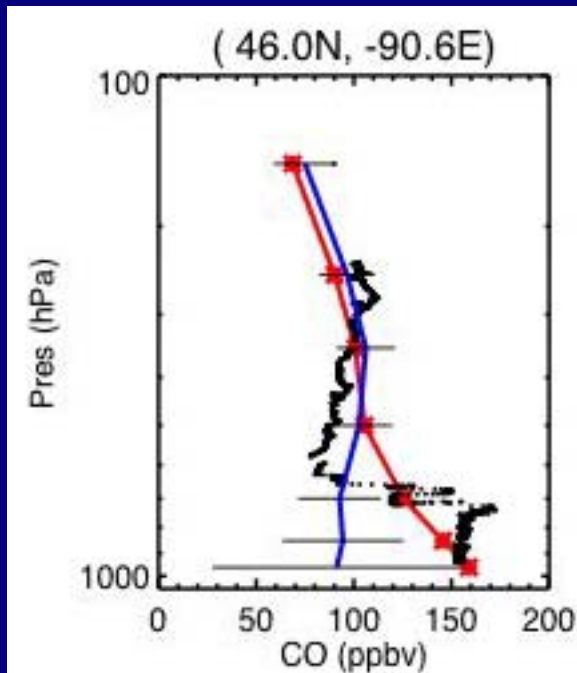
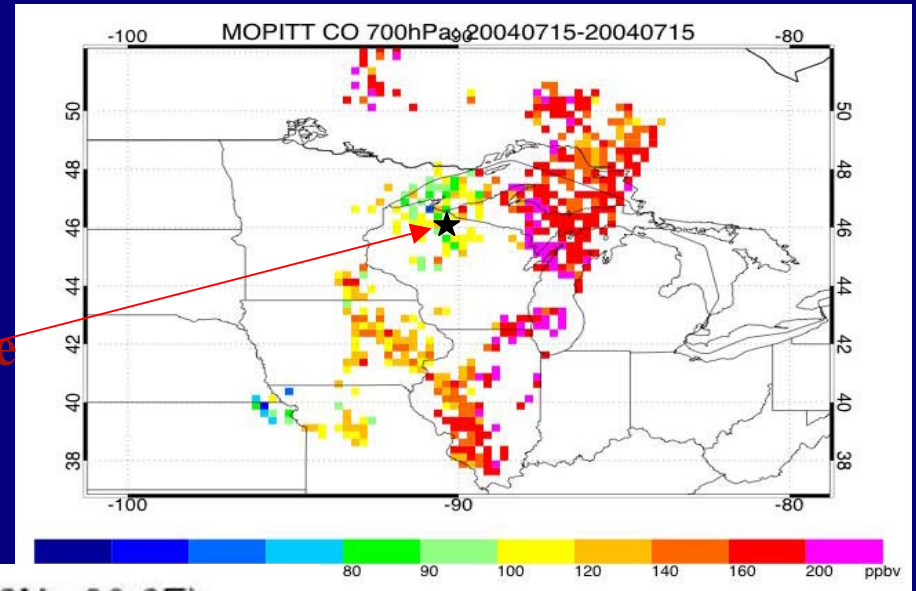




# MOPITT & DC-8 CO - July 15, 2004

High CO and smoke from the Alaskan fires seen by Terra over Lakes Superior and Michigan

DC-8 profile



MOPITT  
In situ CO

In situ CO transformed  
with averaging kernels

L. Emmons



# Preliminary observations

- Extensive validation of Terra, Aqua, and Envisat satellites
- Asian influences across north America are far more pervasive than expected in the summer
- Forest fire smoke spreads across United States and the Atlantic at many locations
- Anthropogenic pollution, smoke from fires, Asian and stratospheric influences coexist in the troposphere in stratified layers
- Extensive tests for model predictive capabilities & state of measurements

